

Name _____ Date _____ Period _____

Find the value for the function.

1. Find $f(-2)$ when $f(x) = \frac{x-2}{x^2+5}$.

2. Find $f(4)$ when $f(x) = -2x^2 + x - 1$.

3. Find $f(-x)$ when $f(x) = \frac{2x}{x^2-7}$.

4. Find $f(x+1)$ when $f(x) = 3x^2 + 5x - 7$.

Find the domain of the function.

5. $f(x) = \frac{5x}{x^2-49}$

6. $f(x) = \sqrt{15-3x}$

7. $f(x) = -2|x| + 8$

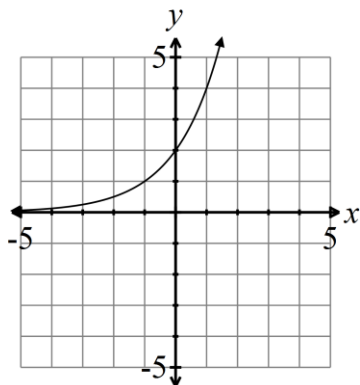
For the given functions f and g , find the requested function and state its domain.

8. $f(x) = \frac{2x-3}{x+5}$; $g(x) = \frac{2-x}{x+5}$. Find $f + g$.

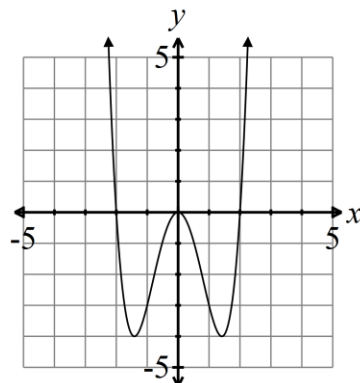
9. $f(x) = \sqrt{2x}$; $g(x) = 2x - 7$. Find $\frac{f}{g}$.

Determine whether the graph is that of a function. If it is, use the graph to find its domain and range, the intercepts, if any, and any symmetry with respect to the x -axis, the y -axis, or the origin.

10.



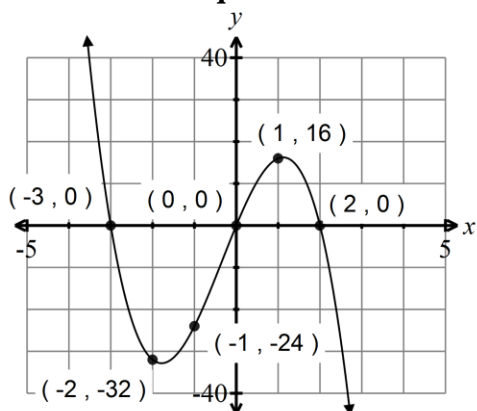
11.



The graph of a function f is given. Use the graph to answer the questions 12 & 13.

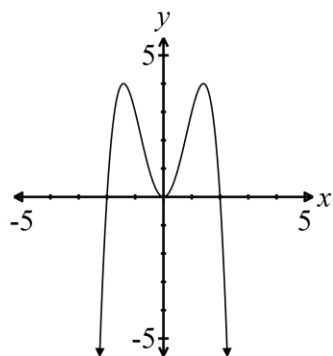
12. Find $f(1)$.

13. For what numbers x is $f(x) = 0$?

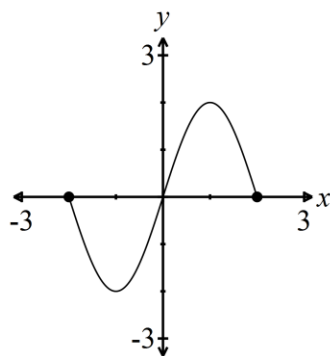


The graph of a function is given. Decide whether it is even, odd, or neither.

14.



15.



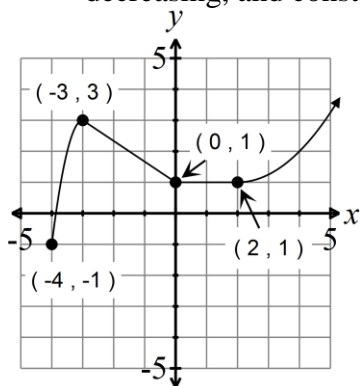
Determine algebraically whether the function is even, odd, or neither.

16. $f(x) = \frac{2x}{3x^2 - 5}$

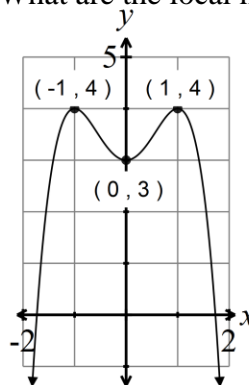
17. $f(x) = \frac{|x|}{x^2}$

The graph of a function f is given. Use the graph to answer the question.

18. Find the intervals on which the function is increasing, decreasing, and constant.

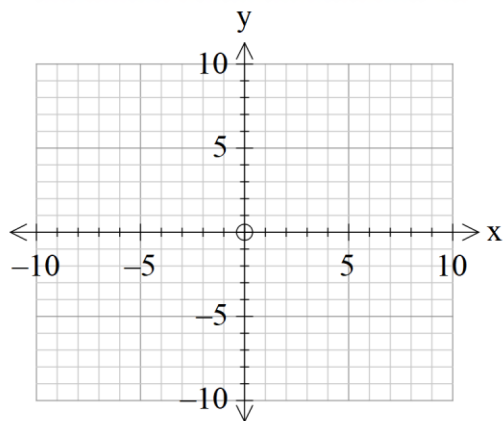


19. Find the numbers, if any, at which f has a local maximum. What are the local maxima?

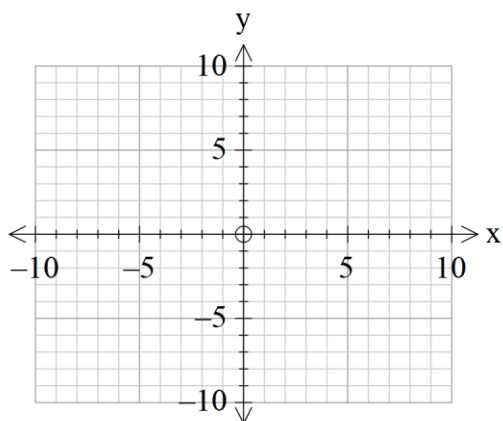


Graph the function.

20. $f(x) = \begin{cases} \frac{1}{2}x & \text{if } -4 \leq x < 2 \\ -2x + 5 & \text{if } x \geq 2 \end{cases}$

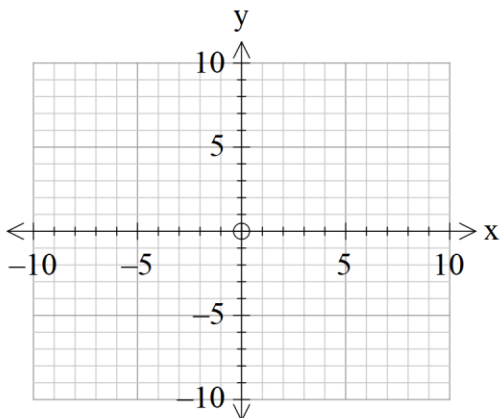


21. $f(x) = \begin{cases} x^2 & \text{if } -2 \leq x \leq 2 \\ 2x - 1 & \text{if } 2 < x \leq 5 \end{cases}$

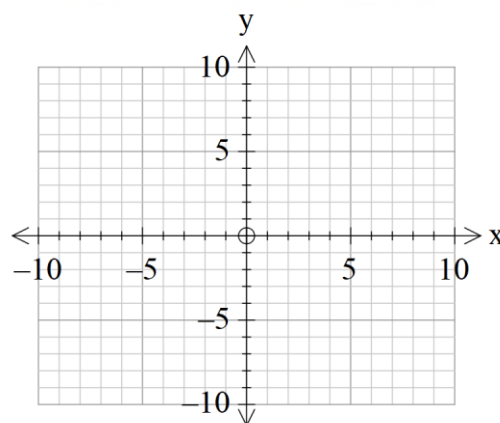


Graph the function by starting with the graph and table of key points from the parent function and then using the techniques of shifting, compressing, stretching, and/or reflections.

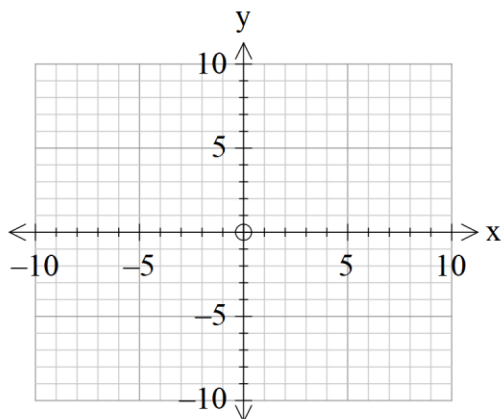
22. $f(x) = |x - 3|$



23. $f(x) = 3\sqrt[3]{x}$



24. $f(x) = \sqrt{-x}$



Write an equation that results in the indicated translation.

25. The square root function, shifted 2 units downward.

26. The reciprocal function, shifted 3 units to the left.

Find the function.

27. Find the function that is finally graphed after the following transformations are applied to the graph of $y = x^2$. The graph is shifted left 5 units, stretched vertically by a factor of 2, shifted vertical up 7 units, and finally reflected across the x -axis.

Find the domain of the rational function.

28. $R(x) = \frac{x-5}{x^2+3x+2}$

29. $R(x) = \frac{x^2+3x}{x^2-x-12}$

Find the vertical asymptotes of the rational function.

30. $R(x) = \frac{7}{x^2+3x-40}$

31. $R(x) = \frac{-x^2+4x-4}{x^2-5x+6}$

Find the horizontal or oblique asymptote of the rational function.

32. $R(x) = \frac{20x}{x+12}$

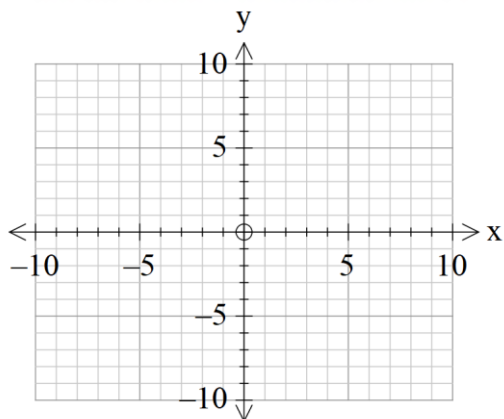
33. $R(x) = \frac{4x^2-3x+7}{x-2}$

34. $R(x) = \frac{x-5}{x^2+3}$

Graph the function. List all intercepts, vertical asymptotes, holes, and horizontal or oblique asymptotes.

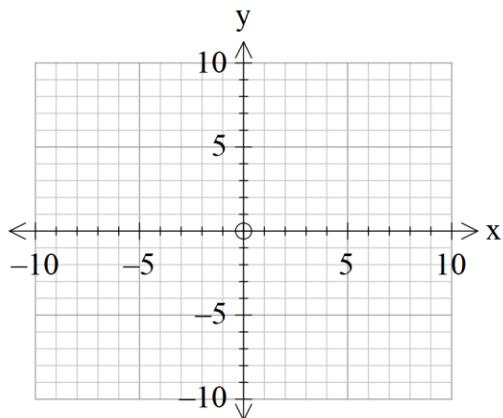
35. $R(x) = \frac{x}{x^2 - 25}$

x-intercept(s)	
y-intercept	
Vert. Asympt.	
Hole(s)	
Horizontal/Oblique Asympt.	



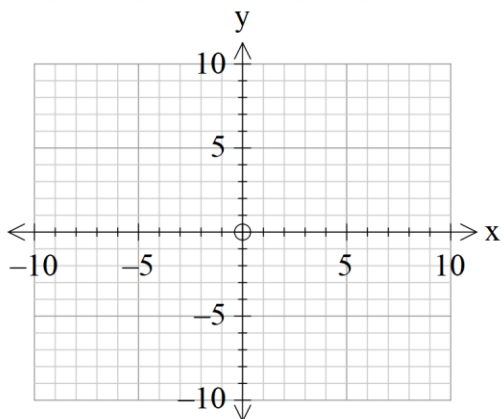
36. $R(x) = \frac{x^2 + 5x - 6}{x + 2}$

x-intercept(s)	
y-intercept	
Vert. Asympt.	
Hole(s)	
Horizontal/Oblique Asympt.	



37. $R(x) = \frac{x^2 + 3x}{x^2 + 2x - 3}$

x-intercept(s)	
y-intercept	
Vert. Asympt.	
Hole(s)	
Horizontal/Oblique Asympt.	



Find the average rate of change for each function in the intervals given.

38. $f(x) = -3x^2 + 1$

a) $[0, 4]$

b) $[-1, 1]$

39. $f(x) = \frac{3}{x-1}$

a) $[0, 2]$

b) $[-2, 4]$